Indus Valley Civilization:

Celebrating the Centennial of the Civilization's Discovery

Bits & Scripts
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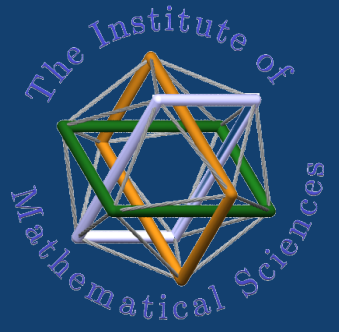
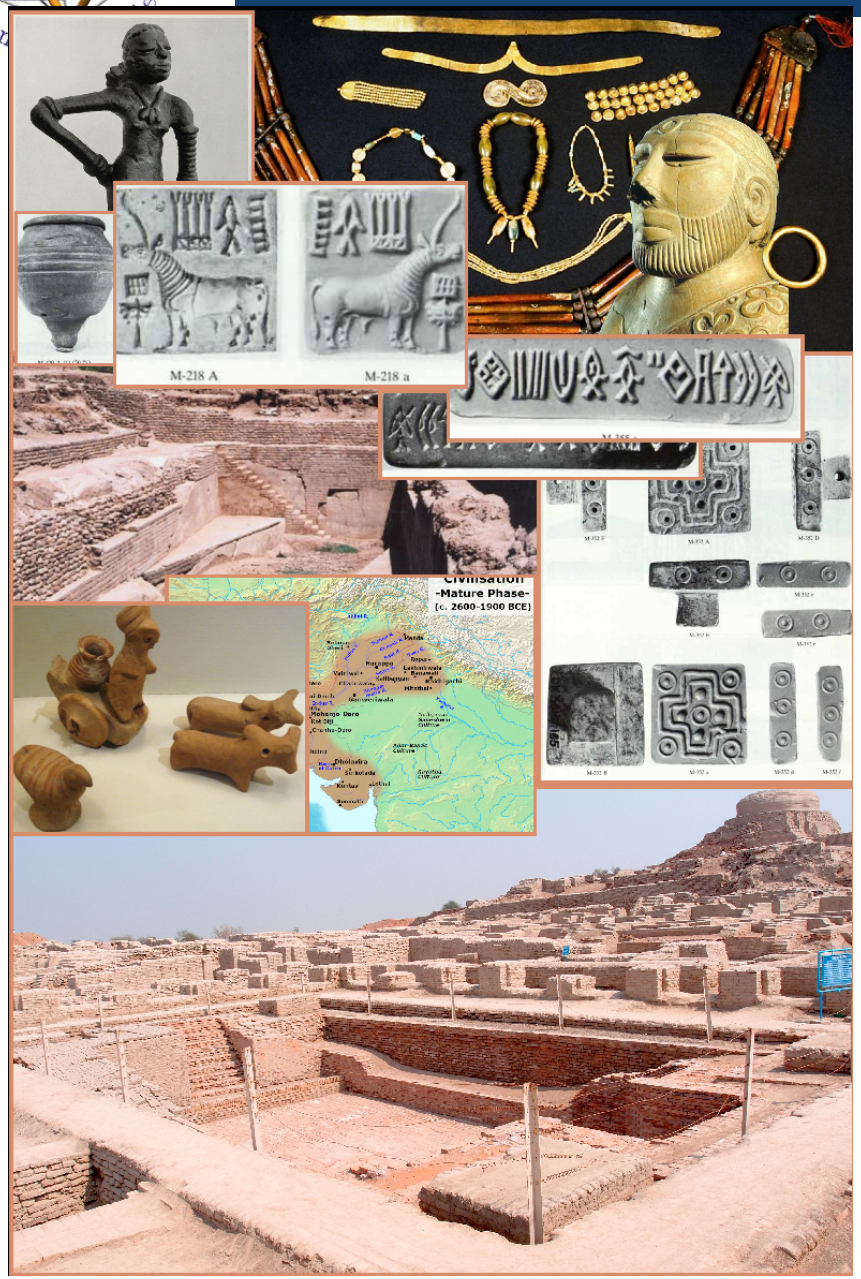


Indus Valley Civilization

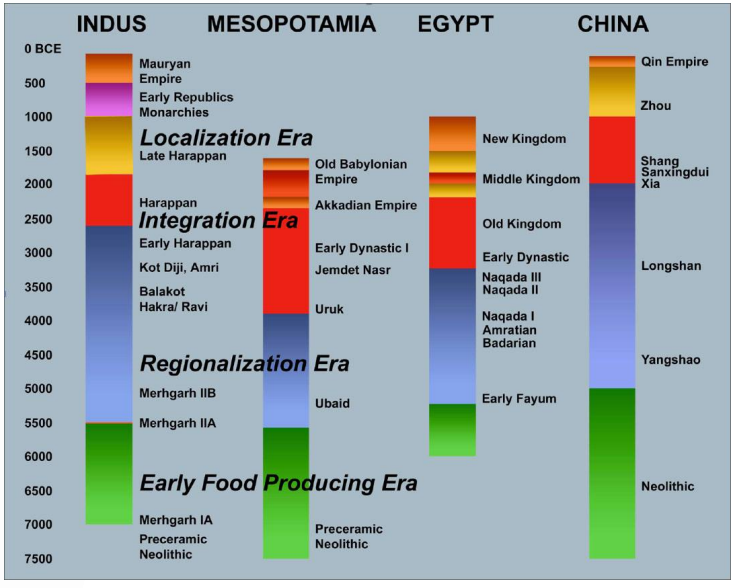


Outlook

- Timeline and Geographical span
- Discovery and Excavation
- Urban Planning and Architecture
- Economic Activities
- Societal Structure
- Religious Beliefs and Practices
- Script and Communication
- Art and Cultural Achievements
- Decline of Civilization

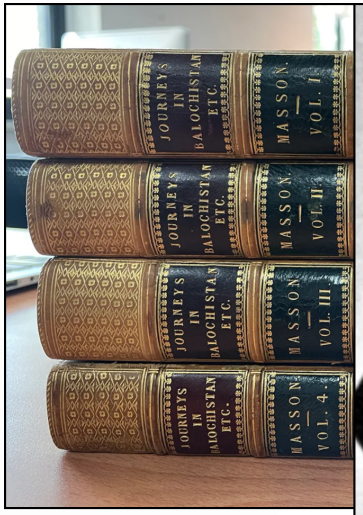
Timeline and Geographical span

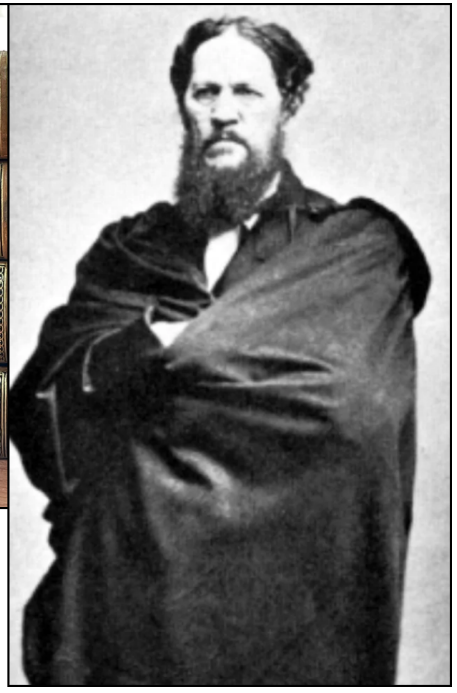
- The Indus Valley Civilization, a Bronze Age marvel, also known as the Harappan Civilization.
- Flourished from 3300 BCE to 1300 BCE, with its mature phase from 2500 BCE to 1900 BCE.
- Spanned modern-day Pakistan and northwest India, featuring major urban centers linked by extensive trade networks.
- It was contemporary with ancient Egypt and Mesopotamia.



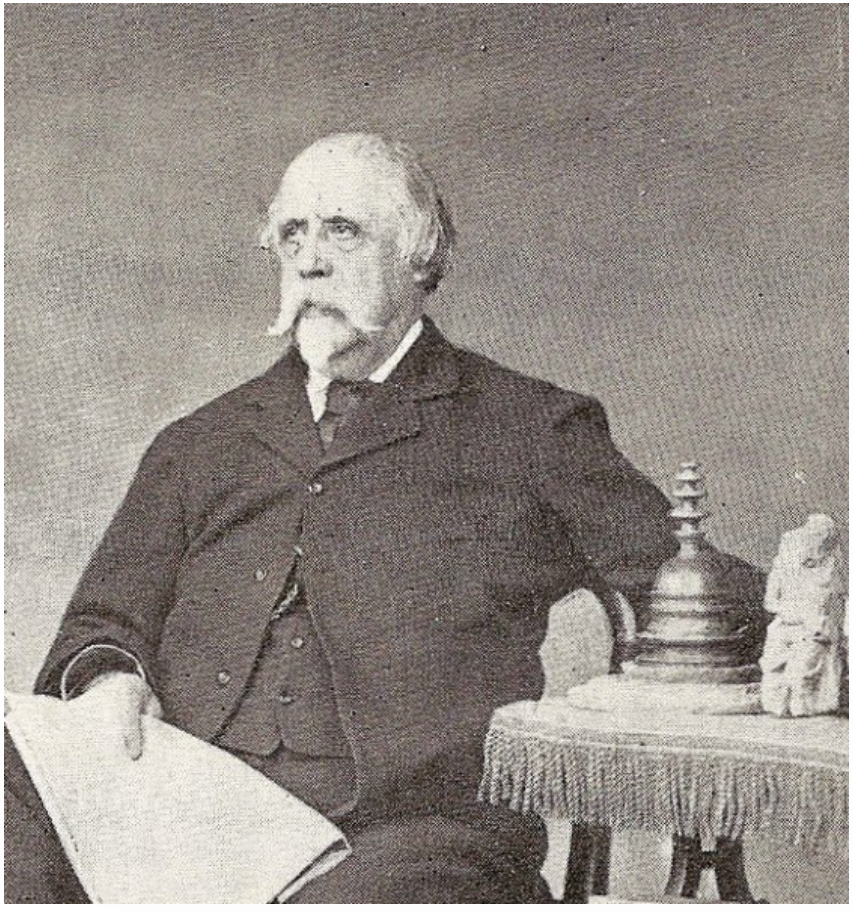
Discovery of Civilization: Initial Notices (1842)

- Charles Masson, a British soldier and explorer, first mentioned the existence of ruins in the region in *"Narrative of Various Journeys in Balochistan, Afghanistan, and the Punjab"*, later understood to be part of the IVC.





Discovery of IVC: Archaeological Interest (1872-75)

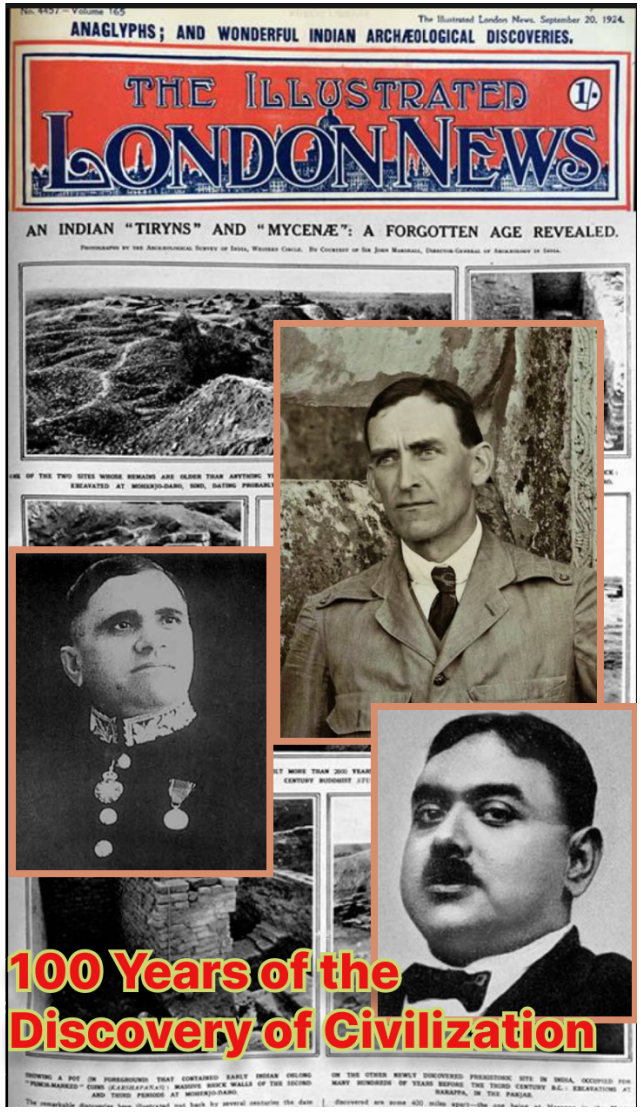


- Alexander Cunningham, the first Director-General of the Archaeological Survey of India, conducted surveys including Harappa.
- The significance of these sites as part of an ancient civilization was not yet recognized.

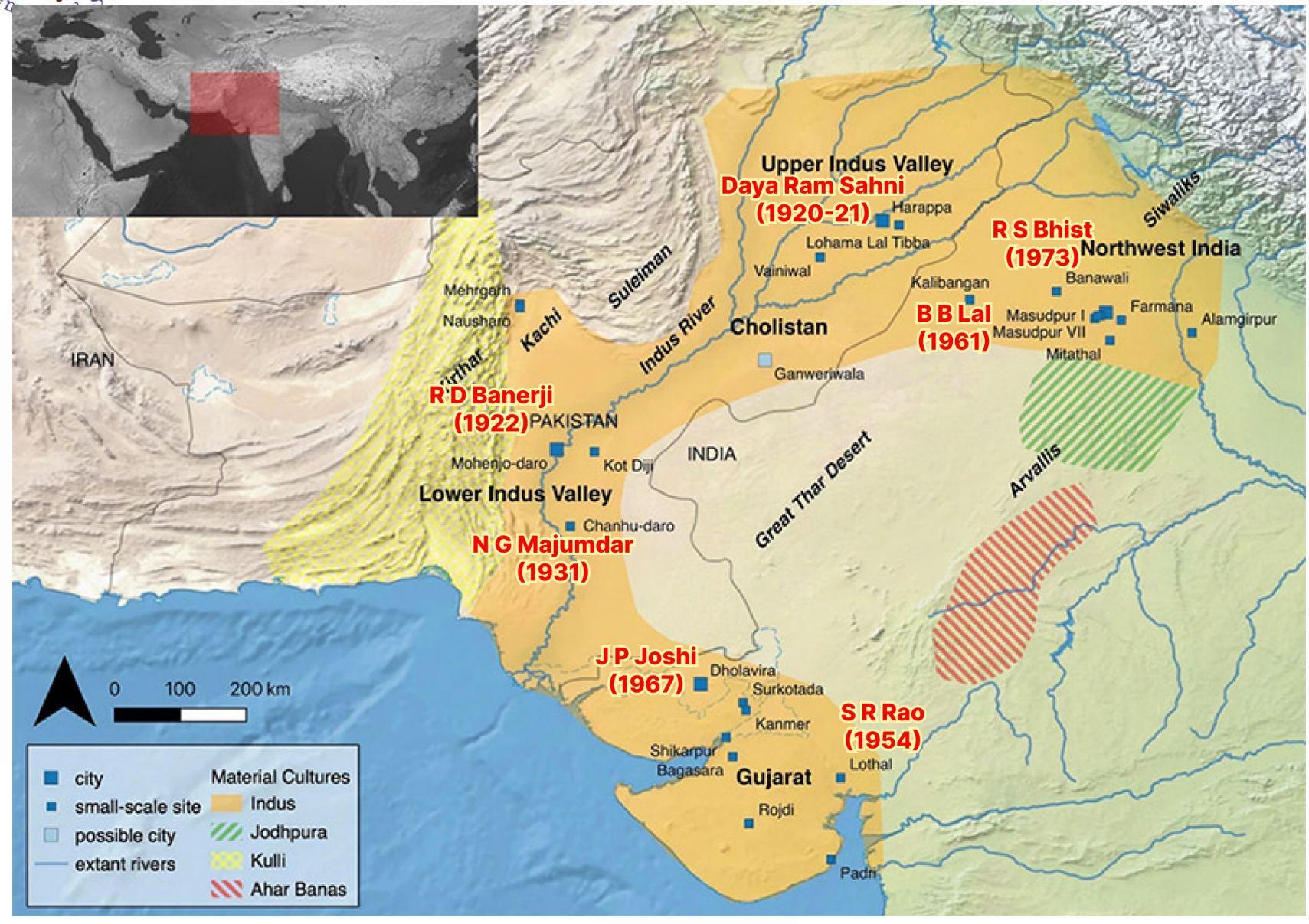
Formal Announcement of the Civilization

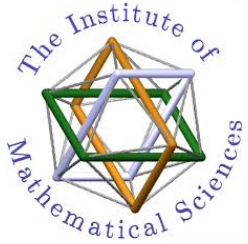
The **formal announcement** and excavation of the IVC began in the 1920s, led by John Hubert Marshall, Director-General of the Archaeological Survey of India.

- **1921**: Daya Ram Sahni first excavated Harappa.
- **1922**: R.D. Banerji excavated Mohenjo-Daro.
- **Recognition as a Civilization (1924)**: John Marshall announced (*"Illustrated London News"*) the discovery of a new civilization in the Indus Valley to the world, marking the official recognition of the IVC.



Discovery of IVC: A few early excavations





Urban Civilization

- All these discoveries were groundbreaking because they revealed a civilization contemporary with those of ancient Egypt and Mesopotamia, yet distinct in its urban planning, architecture, and culture.

Urban Planning and Architecture

Urban Planning and Architecture

- **Grid Layout and Urban Planning:** Cities were planned on a precise grid system, with streets laid out in perfect right angles, demonstrating an early form of urban planning. Archaeological evidence from Mohenjo-Daro and Harappa shows a highly organized layout of residential and commercial areas.

Urban Planning and Architecture

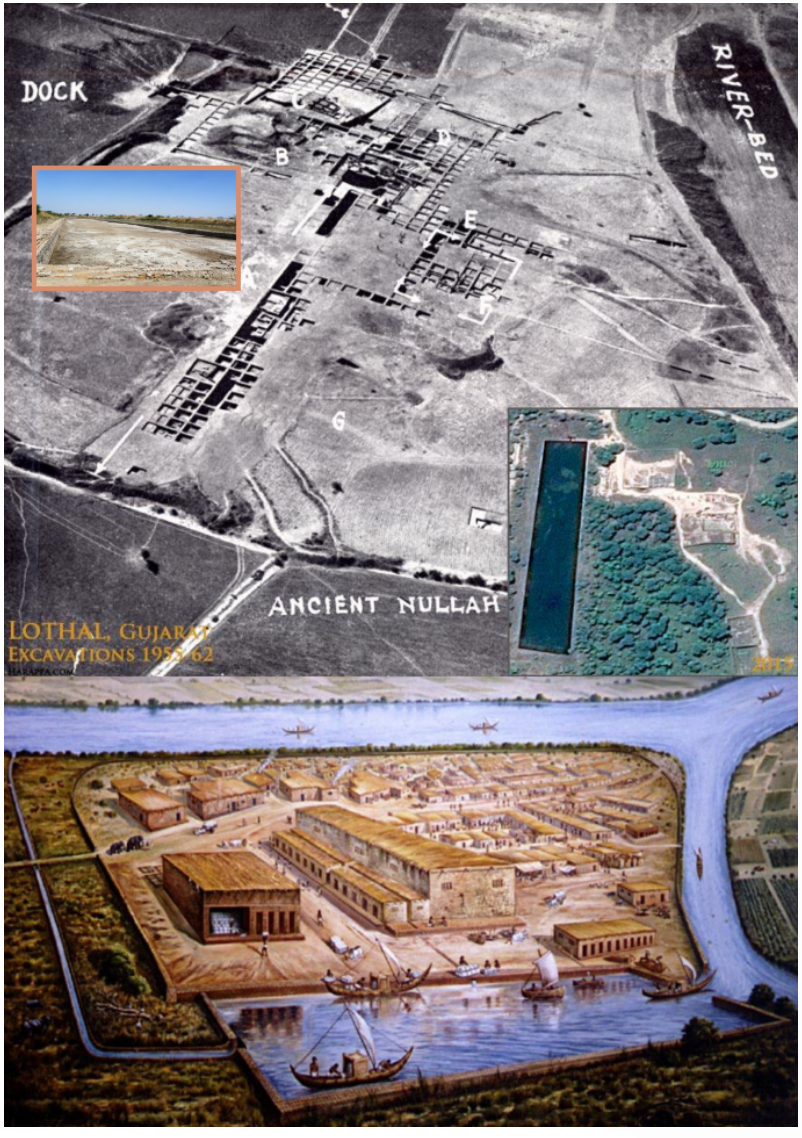
Advanced Water Management System

- The civilization is known for one of the earliest sophisticated sewage and drainage systems, with evidence of covered drains running alongside major streets, indicating a high priority for cleanliness and public health.
- Mohenjo-Daro and Dholavira showcase advanced water management systems with household wells, public baths, and unique water conservation systems.

Urban Planning and Architecture

- **Standardized Brick Sizes:** Bricks were standardized in size and quality, used extensively for building homes, public baths, and drainage systems. This uniformity suggests centralized planning and regulations for construction activities.

Urban Planning and Architecture

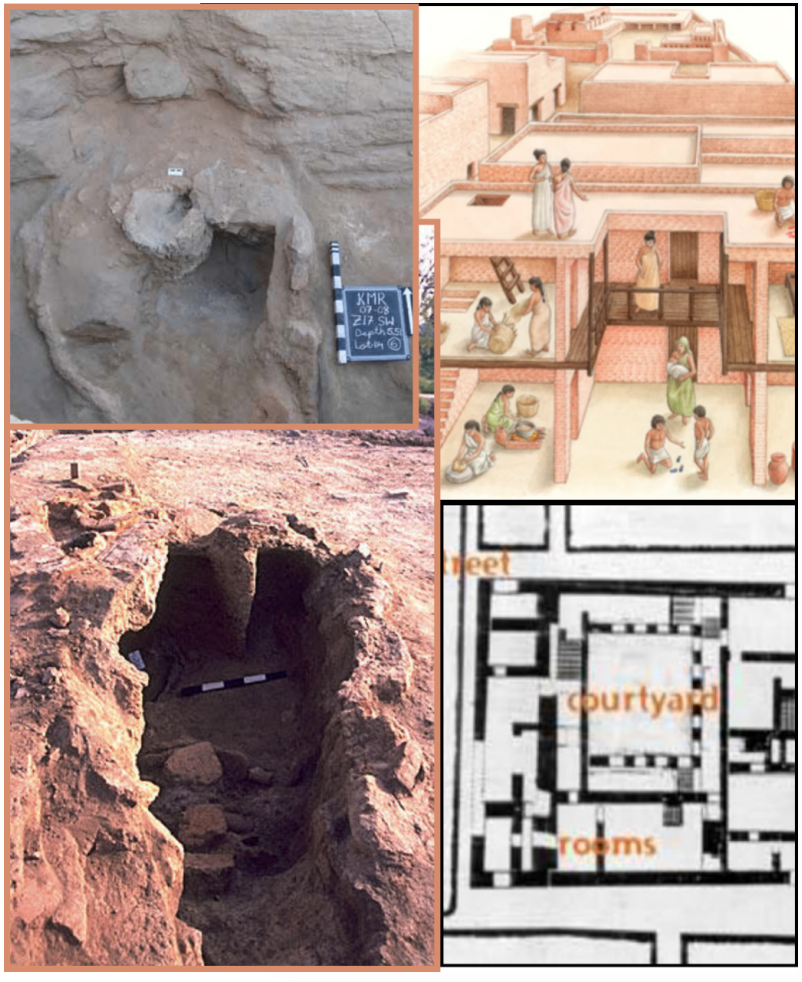


- **Dockyard at Lothal:** Lothal is claimed to have an ancient dockyard, suggesting maritime trade and shipbuilding activities.
- Archaeological findings highlight its connections with distant lands through sea trade.

Urban Planning and Architecture

- **Public and Community Structures:** The presence of large granaries at sites like Harappa and Mohenjo-Daro indicates storage and distribution of agricultural produce, reflecting an organized and sustainable economic system. The Great Bath of Mohenjo-Daro suggests some kind of social gathering.

Urban Planning and Architecture



- **Architectural Innovations:** The use of kiln-fired bricks for construction, evident across various sites, indicates technological advancement in building durable structures.
- Additionally, the design and construction of multi-storied buildings, with evidence found in Mohenjo-Daro, reflect an understanding of vertical space utilization in urban settings.

Urban Planning and Architecture

- **Defensive Structures:** Although not universally present, some sites like Dholavira display evidence of fortified walls and gates, suggesting concern for defense and city planning that incorporated protective measures against potential threats.

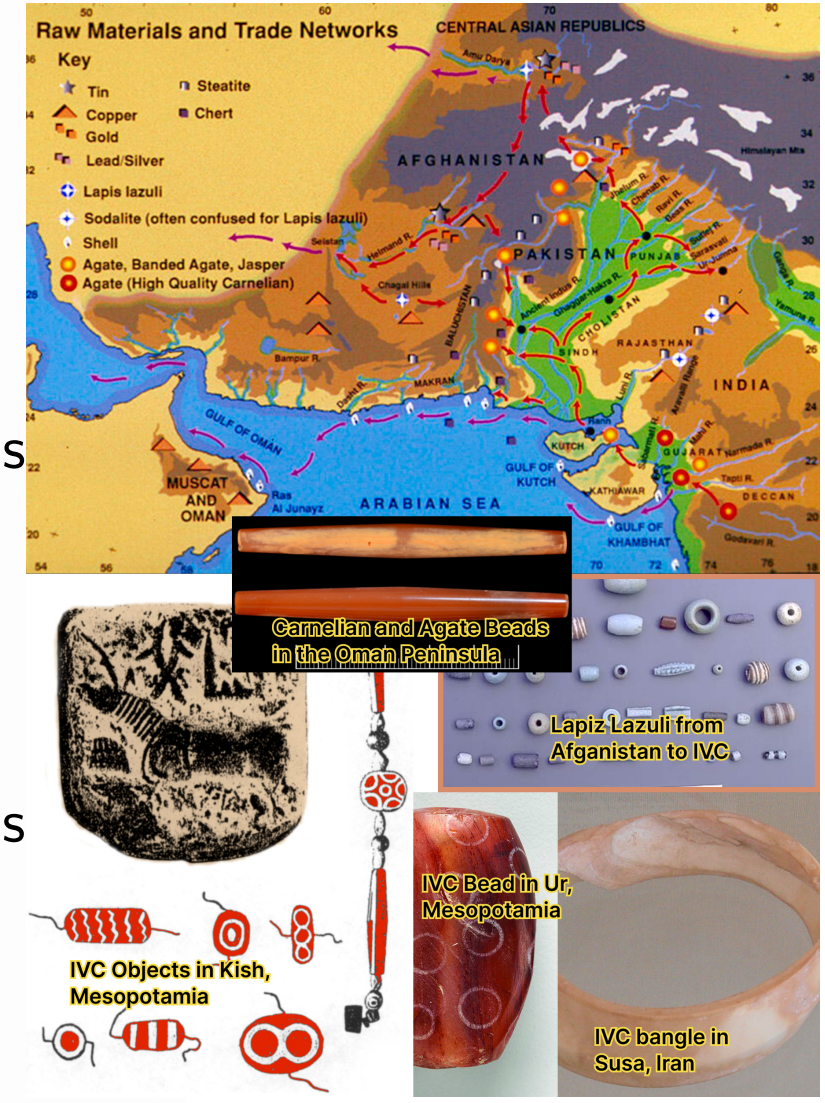
Economic Activities

Economic Activities

- **Agriculture:** The Indus civilization was predominantly agrarian, evidenced by wheat and barley at Harappa and Mohenjo-Daro, and rice at Lothal.
- They also cultivated peas, sesame, cotton, and recent studies show oilseeds, spices, and fruits, indicating advanced agricultural and dietary practices.

Economic Activities

Trade (Local and International): The Indus Valley Civilization engaged in extensive trade, both locally and with distant regions like Mesopotamia, as evidenced by the discovery of Indus seals and weights far from their origin. Artefacts like beads, seals, and pottery found in Mesopotamia, and the presence of materials like lapis lazuli, which is not native to the Indus region, suggest international trade connections.



Economic Activities

- **Crafts and Industries**: The people of the Indus Valley excelled in various crafts, including bead-making, pottery, seal-making, and metallurgy. Archaeological discoveries such as the intricate beadwork found at sites like Chanhu-Daro and the advanced drainage systems of Mohenjo-Daro and Harappa showcase their craftsmanship and industrial capabilities.

Economic Activities

- **Construction**: The urban planning and construction techniques of the Indus Valley Civilization, as seen in the grid layouts, standardized brick sizes, and sophisticated water management systems of cities like Mohenjo-Daro and Harappa, indicate a highly organized economic activity focused on infrastructure development.

Economic Activities

- **Animal Husbandry**: The presence of animal figurines and archaeological remains at various sites points to animal husbandry as an important economic activity. The domestication of animals such as cattle, buffalo, sheep, and goats was crucial for agricultural production, meat, and possibly dairy products.

Societal Structure

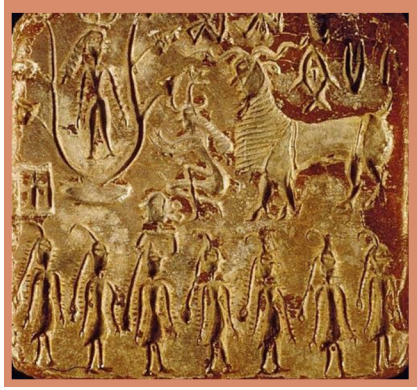
Societal Structure

- Evidence of differentiated living spaces and the quality of grave goods in burial sites indicates the presence of social stratification within the IVC.
- The existence of specialized crafts, such as bead making, pottery, and metallurgy, as evidenced by archaeological finds, points to a society with diverse occupations and skills.
- This specialization suggests a complex societal structure with various roles and statuses.
- Toys, dice, and gaming pieces found in excavations suggest leisure activities and games were part of daily life.

Religious Beliefs and Practices

Religious Beliefs and Practices

- There is no clear evidence of religious belief or practices, yet specific rituals were integral to their daily life.
- The "Pashupati seal", interpreted by some as an early representation of a deity similar to Shiva.
- Indus burial practices indicating possible beliefs in an afterlife.



Script and Communication

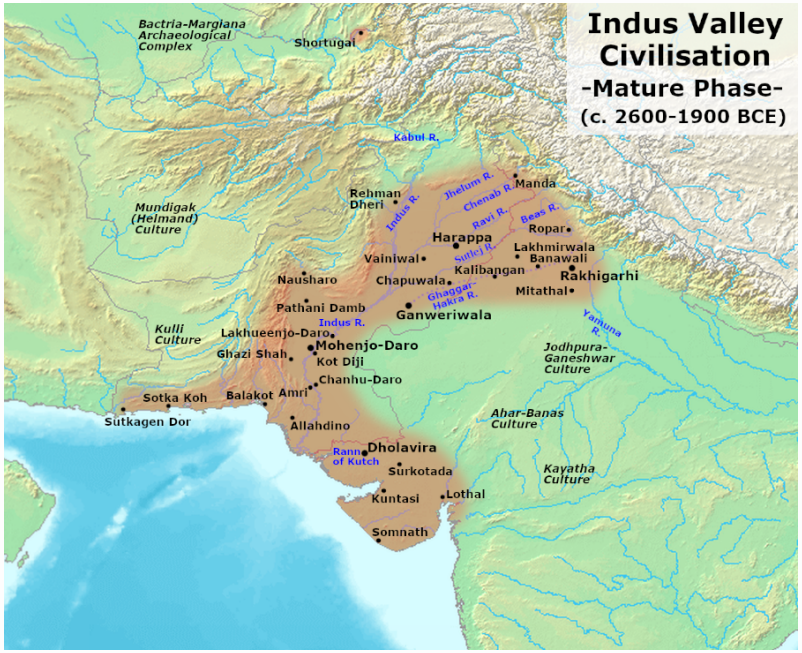
Script and Communication

- **Inscription**: Numerous inscriptions found on different seals, tablets, pottery, and metal objects within the Indus Valley Civilization, featuring over 500 symbols, suggest a sophisticated communication system. Despite extensive studies, the script remains undeciphered, largely because there is no Rosetta Stone-like artifact to unlock its language.

Script and Communication(No Rosetta Stone)

- Found in 1799 in Rashid, Egypt, the Rosetta Stone features the same text in three scripts: Egyptian Hieroglyphics (unknown), Demotic (unknown), and Ancient Greek (known), enabling the decipherment of hieroglyphics.
- The multilingual inscriptions provided crucial clues for understanding ancient Egyptian scripts, bridging known and unknown languages.
- Despite immediate recognition of its value, fully deciphering the hieroglyphics took over two decades.

Script and Communication

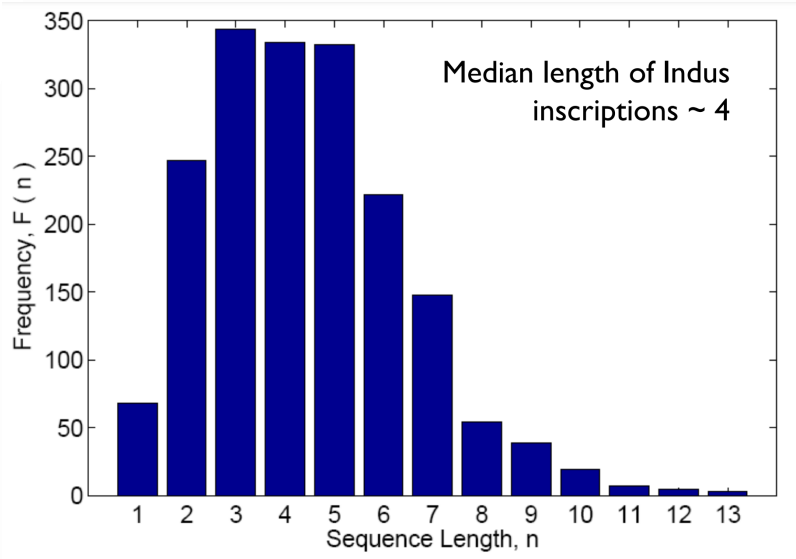


- **Geographical Spread**: The script was widespread across the Indus Valley Civilization, from major cities like Mohenjo-Daro and Harappa to smaller settlements, indicating its key role and suggesting cultural and administrative uniformity across regions.

Script and Communication

- **Wide Usage**: The script was widely used across a variety of mediums, indicating its significance in daily and ceremonial life.
- Seals bearing these inscriptions, often accompanied by animal motifs, suggest their use in trade, administration, or rituals.
- Its presence on materials from terracotta to metal indicates a literate society using writing for various purposes.

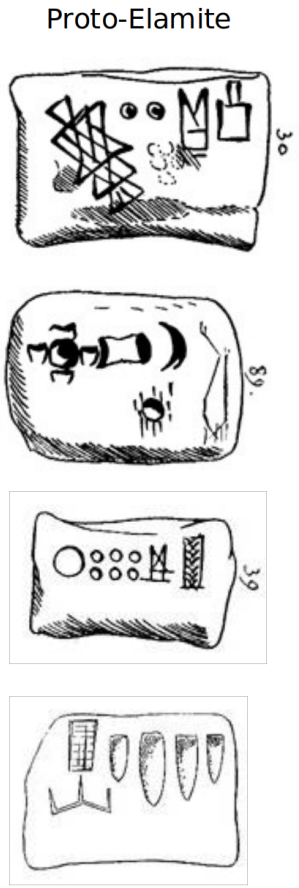
Script and Communication

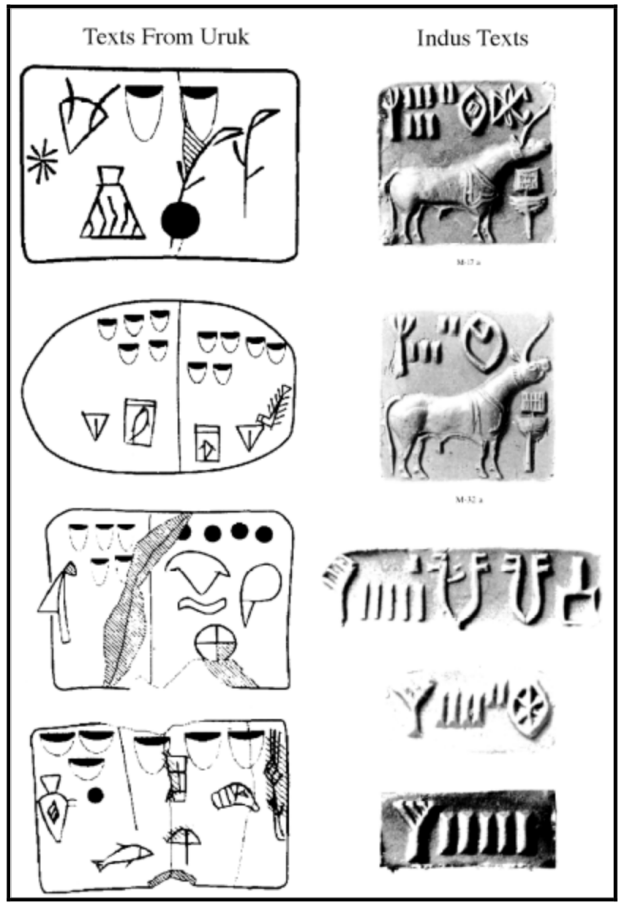


- **Short Inscriptions**: Most inscriptions are brief, often just a few symbols, leading to speculation on whether they denote names, titles, trades, or religious meanings (. . . non-linguistic theories!). This brevity complicates decipherment, offering little context for interpretation.
- . . . but are they only short inscriptions?

Script and Communication

- The brevity of ancient scripts, like those from Elam and Uruk, does not undermine their status as true writing. Short inscriptions still offer significant insights into past cultures and require context for full understanding.





Script and Communication

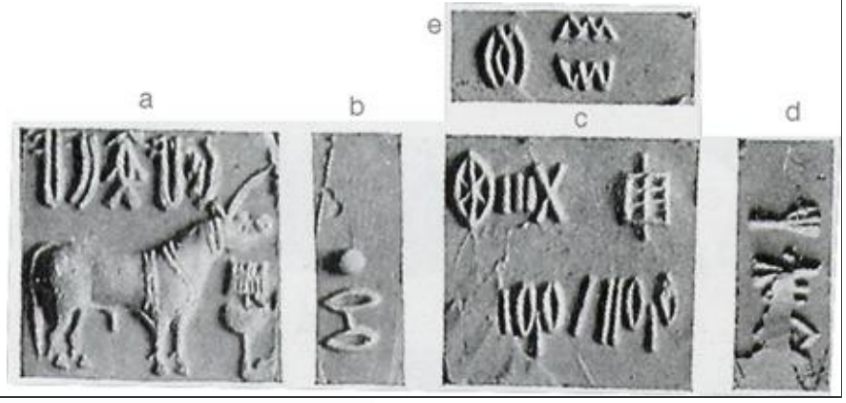
Other Short Seal Texts

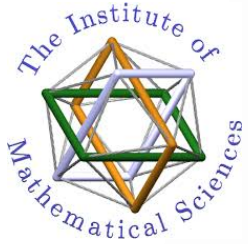
Egyptian Seals

Chinese Seal

Anau Seal

J'lem Seal



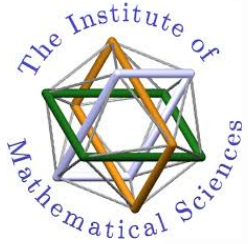


Script and Communication

- Until it is satisfactorily deciphered, no “writing” can be absolutely proved to be “writing”! But neither can it be proved absolutely that it is not writing !

Script and Communication

- Before cuneiform was deciphered in 19th century, widespread skepticism that it represented writing suggested to be purely decorative or even footsteps of birds !
- Similar views on Mayan script: considered decorative or symbolic, not real writing.



Script and Communication

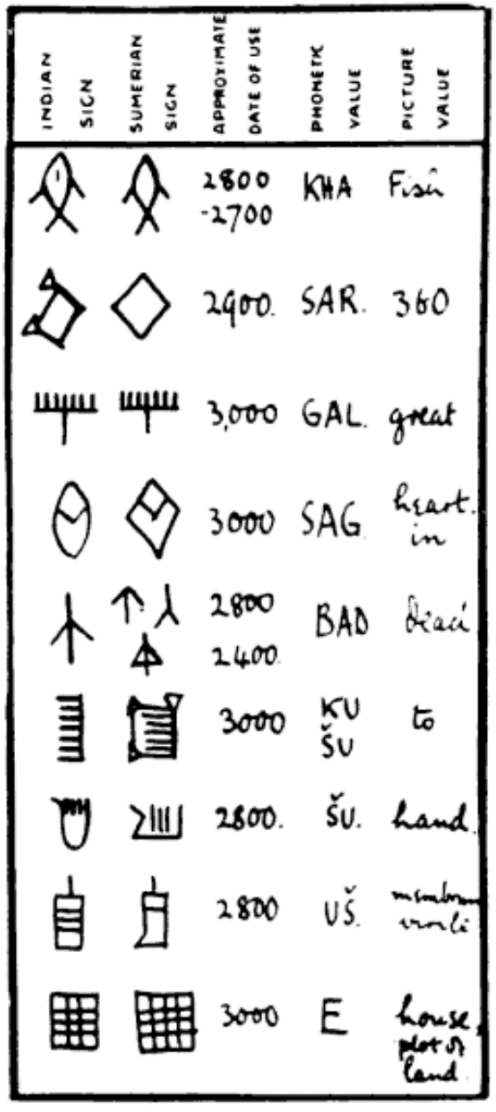
Linguistic connections & Hypothesis

Connection to Sumerian and Proto-Elamite ?

From first discovery of seals, speculation on connection between the Indus signs and Sumerian and undeciphered Proto-Elamite

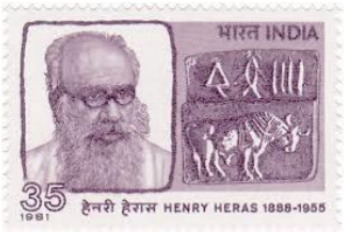
Proto-Elamite possibly never developed into a full writing system – Elamite later borrowed cuneiform system of Mesopotamia

Gadd & Smith, 1924



Script and Communication

Dravidian ? Indo-Aryan ? Munda ? Language X ?



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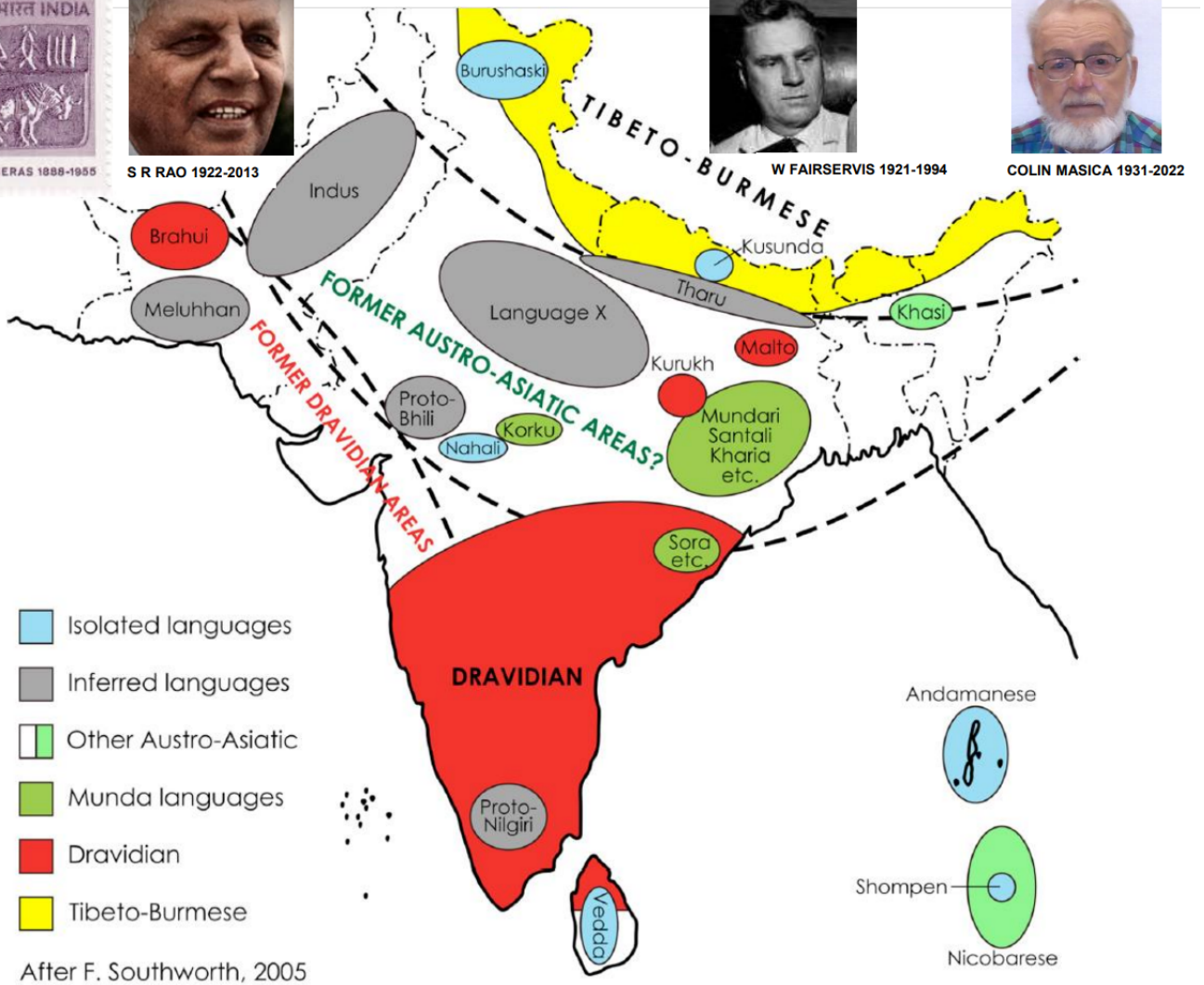
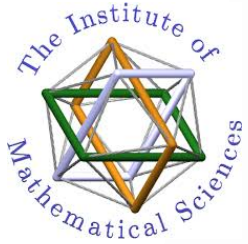
W FAIRSERVIS 1921-1994

COLIN MASICA 1931-2022



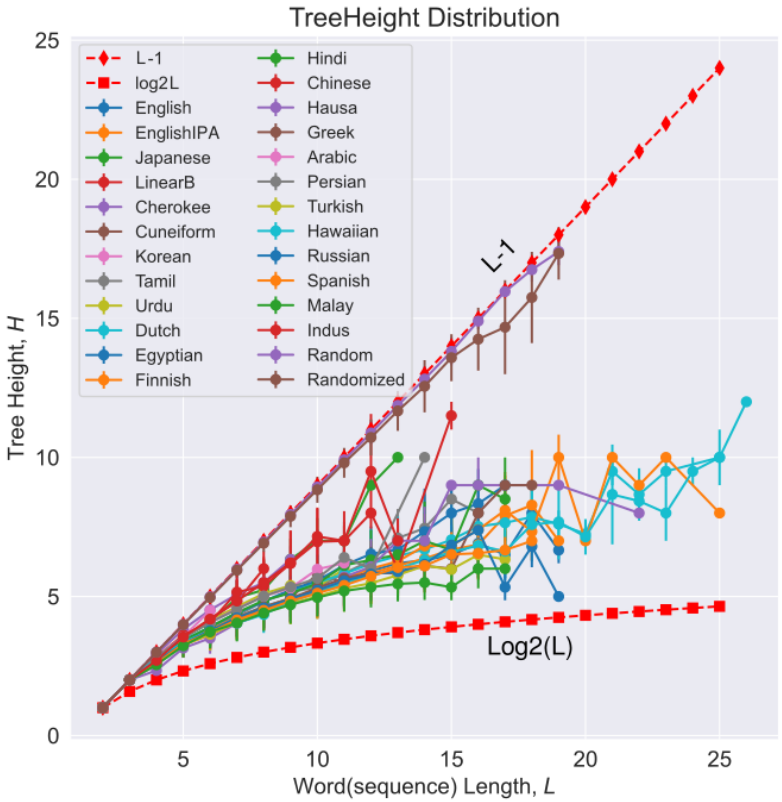


Script and Communication

- **Non-linguistic Theories**: Some researchers argue that the Indus script may not represent a language but rather a system of symbols used for administrative or religious purposes, similar to heraldic emblems in medieval societies. This perspective suggests that the script was symbolic rather than linguistic, a theory that remains contentious among scholars.

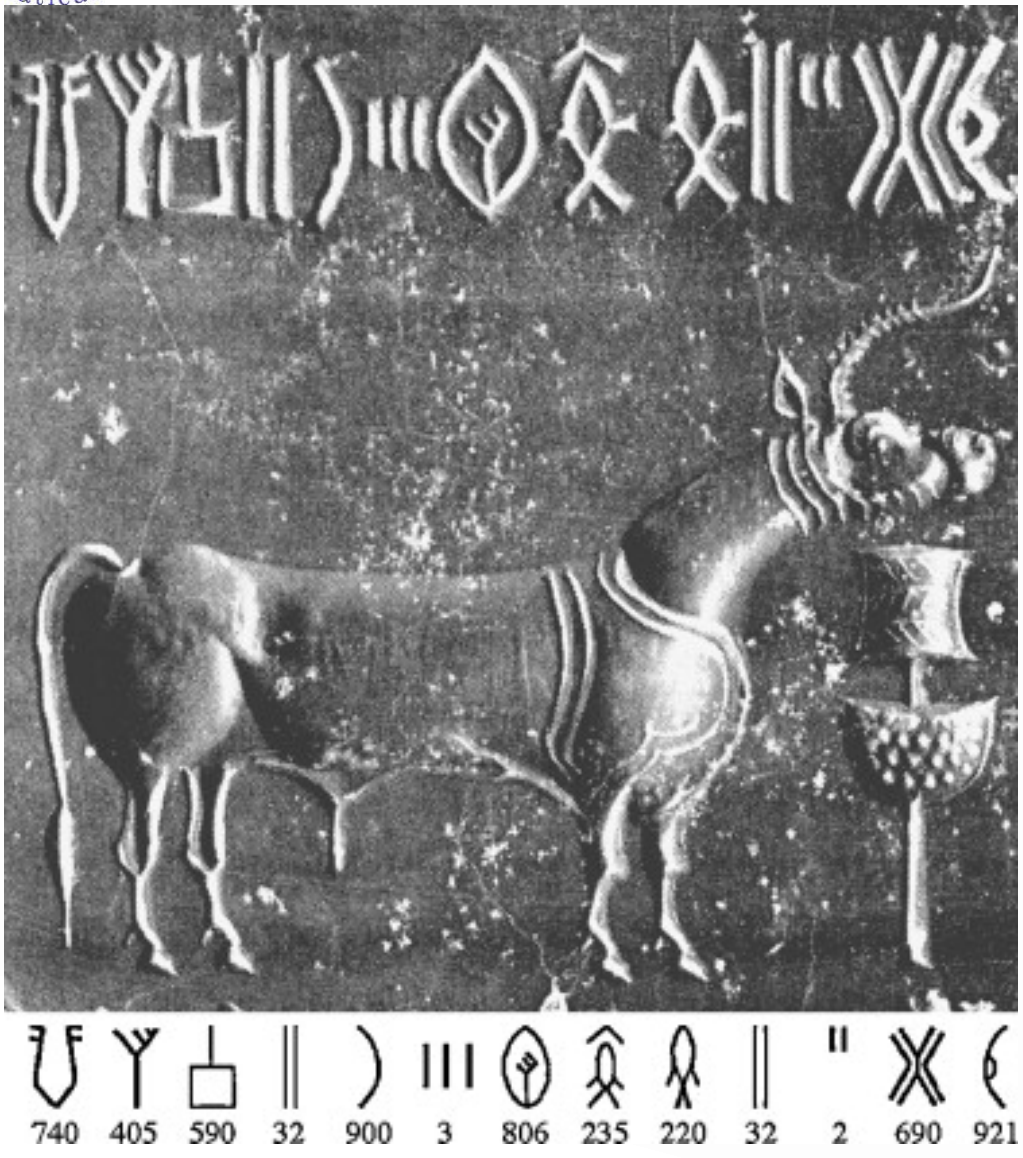
- **Criticism**: The presence of recurring sequences and possible grammatical structures argues against a purely non-linguistic system.

Script and Communication



- **Statistical Analysis**: Recent efforts to decipher the script have used different computational methods to identify patterns. These studies suggest that the Indus script may follow a logical structure similar to known languages . . . . . still far from deciphering it.
- As a Computational Epigraphist, in this workshop, we will explore the possibilities that can (and cannot) be achieved by computational methods.

Script and Communication



- #Concordance?
- #Signary size?
- Variation in signary size?
- Reason of variations?

Art and Cultural Achievements

Art and Cultural Achievements

- **Ceramics and Pottery**: The civilization is known for its red and black pottery, often finely painted with designs of animals, geometric patterns, and human figures. The quality and uniformity of pottery across various IVC sites suggest skilled craftsmanship and possibly centralized production methods.

Art and Cultural Achievements

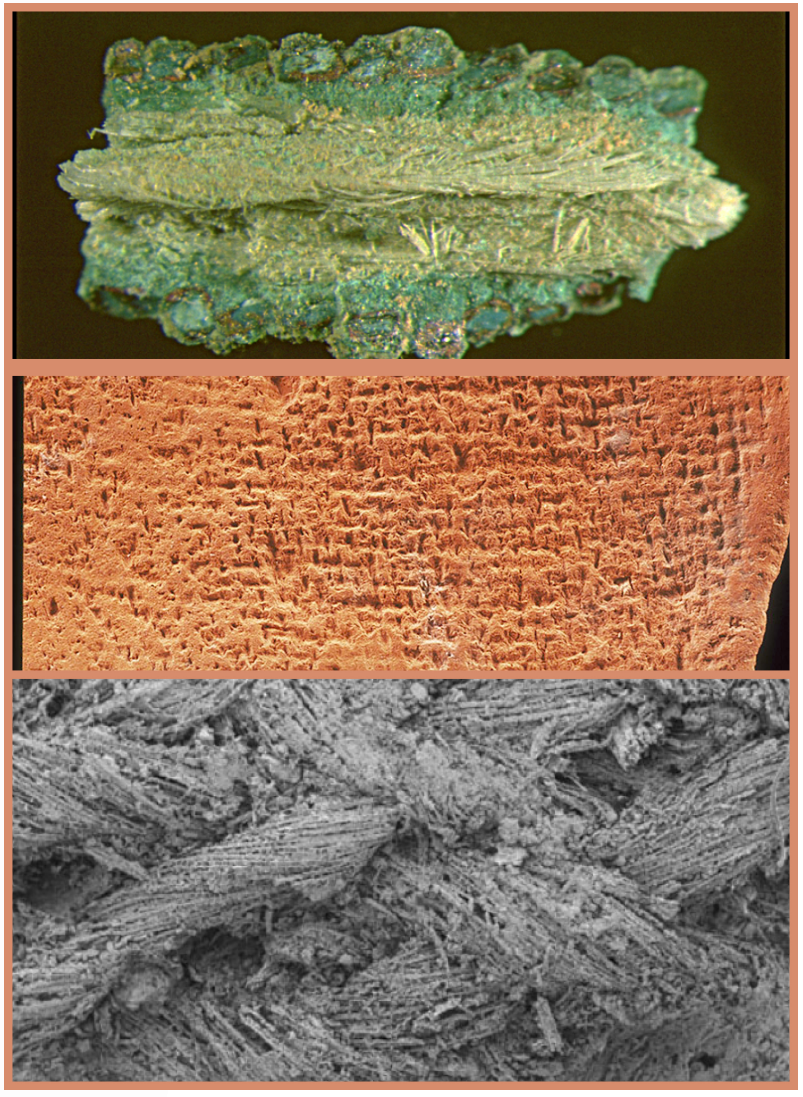
- **Toys and Games**:
  Archaeological finds include toys and game pieces, such as dice made from terracotta, indicating leisure activities and possibly educational tools for children.

Art and Cultural Achievements

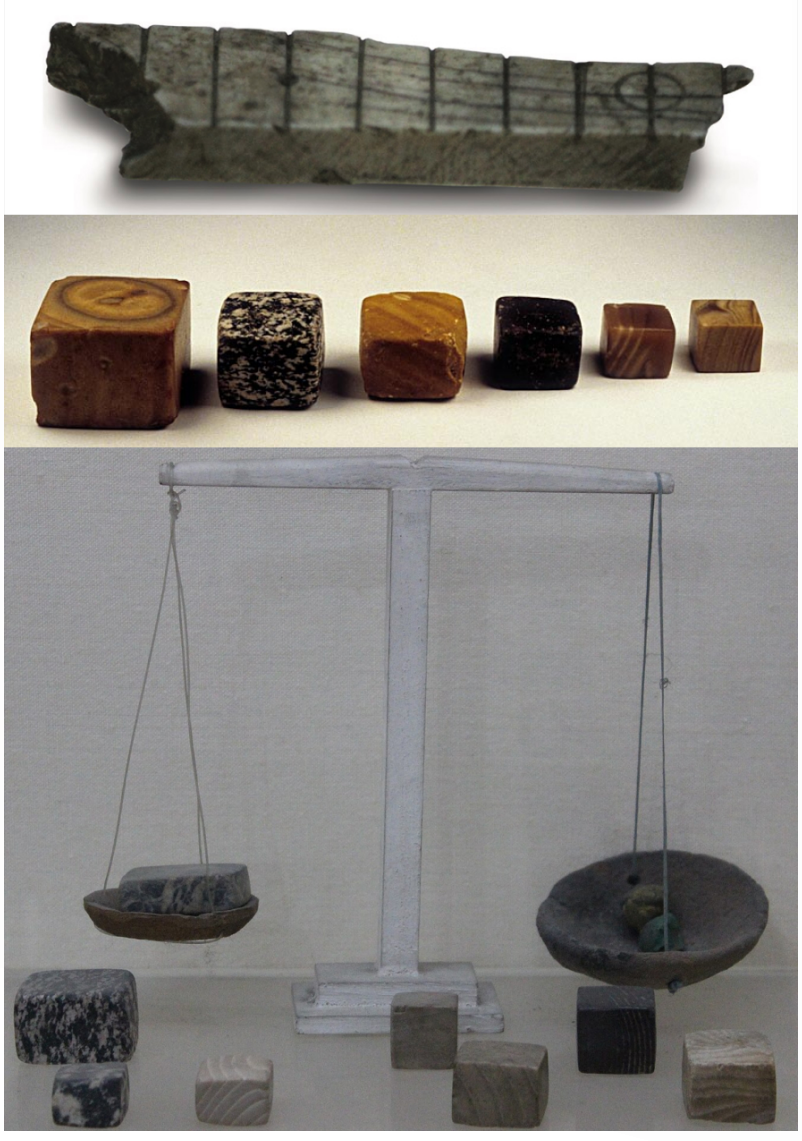
- **Jewellery and Bead Making**: The IVC people excelled in making intricate jewellery from gold, semi-precious stones, and terracotta. Sites like Lothal provide evidence of bead-making workshops, reflecting the high level of skill in crafting beads from materials like carnelian, lapis lazuli, and ivory.

Art and Cultural Achievements

- **Textiles**: While direct evidence of textiles has not survived, impressions on pottery and figurines suggest that the IVC had developed weaving techniques. The representation of clothed figures in terracotta and on seals indicates knowledge of textile production.



Art and Cultural Achievements



- **Weight and Measure Systems**: A uniform system of weights and measures discovered across IVC sites indicates an organized approach to trade and commerce, highlighting the civilization's mathematical and administrative capabilities.

Art and Cultural Achievements

- **Artistic Motifs and Decoration**: The use of geometric patterns and motifs, both in pottery and architectural decoration, reflects the aesthetic sensibilities and artistic achievements of the IVC. The designs found in the Great Bath of Mohenjo-Daro exemplify the civilization's architectural and artistic sophistication.

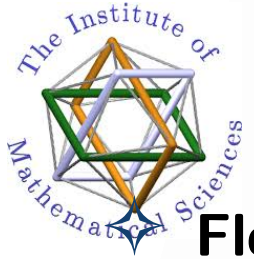
Art and Cultural Achievements

- **Metallurgy**: Evidence of advanced metallurgy includes artifacts made from copper, bronze, lead, and tin. Discoveries at sites like Harappa show sophisticated techniques in metalworking, indicating the civilization's significant achievements in this field.

Decline of Civilization

Decline of Civilization

- Around 1800 BCE, Mature Harappan sites like Cholistan were abandoned. Populations shifted to new settlements. Scholars attribute decline to climatic change.
- **Theories of Decline**: Researchers propose various theories like enormous floods, Earthquake, river course changes, aridity, Aryan invasion, or environmental degradation due to urban demands.

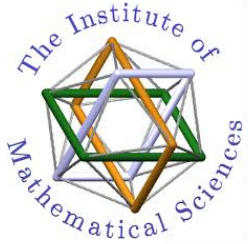


Decline Theories of Civilization . . .

- **Flood & Earthquake Theory**
  - *Evidences:*
    - Flood: Occupation levels divided by silt deposits; houses and streets covered by silt deposits up to 30 ft. above ground level; houses built on silt-covered debris.
    - Earthquake: The Indus area is a disturbed earthquake zone; earthquakes raised the level of flood plains, blocking river water to the sea, forcing water into cities.
- **Shifting of the Indus River**
  - *Evidences:* Silt in Harappa due to wind action, not floods.
- **Increased Aridity**
  - *Evidences:* Mid-2nd millennium saw increased aridity; semi-arid regions like Harappa most affected; decline of agriculture; tectonic movement affecting river systems.
- **Barbarian or Aryan Invasion**
  - *Evidences:* Human skeletons on streets; Rig Vedic texts mention battles; geographical area includes Punjab Ghaggar region; mentions place called Hariyapiya.

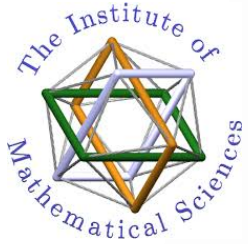
Decline of Civilization . . .

The decline of the Indus Valley Civilization remains a debated topic. However, the most accepted theory suggests the civilization declined due to climate change, specifically shifting monsoon patterns, leading to drought and reduced agricultural productivity, which caused inhabitants to migrate towards more hospitable regions.



Conclusion

- The Indus Valley Civilization, from its origins to its decline, showcased an advanced society, though its script remains undeciphered despite widespread use.
- In the present digital age, computational methods provide new tools, such as web scraping, which is especially useful for comparative studies, particularly when we have only short and limited inscriptions.



References(including figures)

Thank You

- www.harappa.com
- www.wikipedia.com
- Archaeological Survey of India